Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

in which I cannot perfectly agree with him, I think ſcarce any body is better acquainted with the ſubject of electricity than himſelf.

XXXII. *A Letter to the Rev. Dr.* Hales, *F.R.S. from Captain* Henry Ellis, *F.R.S. dated* Jan. 7, 1750-51, *at* Cape Monte Africa, *Ship* Earl of Hallifax.

SIR,

Read June 13. 1751. I MAKE uſe of this opportunity of writing to you, leſs from the vanity I have of having ſuch a correſpondent, than the deſire of contributing to his ſatisfaction, who eſteems it his greateſt happineſs to promote the intereſt of mankind. At yours and Lord Hallifax's recommendation, I had your ventilators fixed on board of my ſhip, at Briſtol. The following is a detail of the experiments, which I made to prove their utility.

1. I took a wax-candle, of eight to the pound, and drew it thro' a mold, to make it of one thickneſs from end to end: then weighed it exactly, and lighted it in the ſhip's hold; where I found it waſted 67 grains in 30 minutes; that place not being ventilated during 24 hours: but after ſix hours ventilation it waſted $94+\frac{1}{2}$ grains in the ſame time.

2. I carried with me into the hold a plate of ſilver, well poliſhed, and a lantern and candle, all blinded, except a round hole of about two inches diameter. I placed the plate at ſix feet diſtance from it; and with

ſuch obliquity, that the rays from the light ſhould fall on its ſurface at an angle of 45 degrees. I then fixed a white paper ſcreen, at the ſame diſtance from the plate, and under the ſame angle with the lantern, ſo that the reflected rays might fall upon it alſo. This being done, I obſerved, that the reflection from the plate diſtinctly was but 17′ 30″ with an unventilated hold; it being turned the colour of tarniſhed lead; whereas, when the air was replaced by 4 hours ventilation, it continued to reflect light, and retain its brightneſs 4 hours 47 minutes.

3. The ſhip's bell, whoſe diameter is 14 inches, I had brought into the hold, when ventilation had been omitted 12 hours. Having hung it under the lower deck, I took out the clapper; and having ſuſpended it alſo by thread, which, with its own length, made 44 inches; the angle, which the rim of the bell made, with a line let fall perpendicular from the pin, on which the clapper hung, was equal to 34′ 0″. I then held the clapper at the ſame angle, on the other ſide of the line, in order that the ſtrokes at different times might be with the ſame force; when, letting it go, it ſtruck the bell. In its return I catched it, and counting the vibrations, I heard them diſtinctly but three times; whereas, when the hold was well ventilated, it vibrated five times; but its vibrations were not ſo quick in the latter, as in the former caſe. I took all poſſible precautions, that theſe experiments might be fairly tried, to prevent deception; but always found them to produce the ſame effects.

We are at preſent very healthy, tho' our number is 130, not one being ſick aboard. Our hold, which

in

in moſt ſhips is very moiſt, in ours is quite dry. Our cargo arms, which are kept there in upright cheſts, without wrappers, come out as bright as from a recent poliſh. Far is a ventilator from being inconvenient aboard of us; on the contrary, 'tis good exerciſe for our ſlaves, and a means of preſerving our cargo and lives.

Upon the paſſage, I made ſeveral trials, with the bucket ſea-gage, in latitude 25′—13″ north; longitude 25′—12″ weſt. I charged it, and let it down to different depths, from 360 feet to 5346 feet; when I diſcovered, by a ſmall thermometer of Fahrenheit's, made by Mr. Bird, which went down in it, that the cold increaſed regularly, in proportion to the depths, till it deſcended to 3900 feet: from whence the mercury in the thermometer came up at 53 degrees; and tho' I afterwards ſunk it to the depth of 5346 feet, that is a mile and 66 feet, it came up no lower. The warmth of the water upon the ſurface, and that of the air, was at that time by the thermometer 84 degrees. I doubt not but that the water was a degree or two colder, when it enter'd the bucket, at the greateſt depth, but in coming up had acquired ſome warmth; for I found, that the water, which came up in the bucket, having ſtood 43 minutes in the air (the time of winding it up) the mercury roſe above 5 degrees. When the air had render'd it equally warm with the water on the ſurface, I tried their weight, by weighing equal quantities very exactly, as alſo by the hydrometer, and found from great depths the heavieſt, and conſequently the ſalteſt water.

This

This experiment, which ſeem'd at firſt but mere food for curioſity, became in the interim very uſeful to us. By its means we ſupplied our cold bath, and cooled our wines or water at pleaſure; which is vaſtly agreeable to us in this burning climate.

I intend, in our paſſage to the Weſt Indies, to ſound a mile deeper than I have done, having a ſufficient quantity of line. But I cannot attempt your method to find the depth of the ſea, for want of apparatus. My buſineſs at preſent affords me very little time for ſpeculation. However, I cannot omit obſerving to you a phænomenon, which I ſaw laſt night, and never before, that I remember; and that was the two arches of the iris, with their colours diſtinct, by moon-light. Having already preſumed much on your patience, and my leiſure,

I am, *&c.*

Hen. Ellis.

A Letter to the Preſident, *from* Stephen Hales, *D. D. & F. R. S.*

SIR, Teddington, June 8, 1751.

Read June 13. 1751. I HAVE here incloſed, at his deſire, a copy of a letter from Captain Ellis, who publiſhed an account of his voyage to Hudſon's Bay.

The bucket ſea-gage, which he mentions, and which I provided for him, to find the different degrees of coolneſs and ſaltneſs of the ſea, at different depths,

depths, was a common houſhold pail or bucket, with two heads in it; which heads had each a round hole in the middle, near four inches diameter, which were cover'd with valves which open'd upwards; and that they might both open and ſhut together, there was a ſmall iron rod fixed to the upper part of the lower valve, and at the other end to the under part of the upper valve: ſo that, as the bucket deſcended with its ſinking weight into the ſea, both the valves open'd by the force of the water, which had by that means a free paſſage thro' the bucket. But when the bucket was drawn up, then both the valves were ſhut by the force of the water at the upper part of the bucket: by which means the bucket was brought up full of the loweſt ſea-water, to which it had deſcended.

When the bucket was drawn up, the hole at the bottom was ſtopped with a cork, to keep the water in, when the valves were open'd, to come at the mercurial thermometer, which being tied to an upright ſtick, could readily be unfaſtened, by pulling out a looſe nail, which went into the upper end of ſtick, which was faſten'd at its lower end in the ſame manner.

But great care muſt be taken to make an obſervation of the degree the mercury ſtands at, before the lower part of the thermometer is taken out of the water; elſe it would immediately be alter'd by the different temperature of the air.

In order to keep the bucket in a right poſition, there are four cords fixed to it, which reach about three feet below it, to which the ſinking weight is to be fixed.

Captain

Captain Robinſon, who is lately arrived from India, ſays, he found ſo much benefit by ventilators, that he will never go a voyage without them; and that he loſt but two men in two years.

There are many other inſtances of the benefit of ventilators in ſhips, not only to the health and lives, but alſo to the proviſions, *&c.*

I am, Sir, with great reſpect,

Your obliged humble ſervant,

Stephen Hales.

XXXIII. *Obſervations on the* Roman Colonies *and* Stations *in* Cheſhire *and* Lancaſhire, *by* Thomas Percival *Eſq*; *communicated by* Hugh *Lord* Willoughby *of* Parham, *F. R. S.*

Read June 13. 1751.

IN the ſecond iter of Antonine's Itinerary, we find, after ſeveral other ſtations mentioned Eboracum

Calcariam M. P. IX.
Camulodunum M. P. XX.
Mamucium M. P. XVIII.
Condate M. P. XVIII.
Devam M. P. XX.

Tho' with various readings of the names.

It is agreed, that Deva is Cheſter, and that Mamucium or Manucium or Mancunium, is Mancheſter, by the common conſent of all antiquarians. But where Condate